



# DD2528 Dependable Autonomous Systems 7.5 credits

## Pålitliga autonoma system

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

## Establishment

The official course syllabus is valid from the autumn semester 2021 in accordance with Head of School decision: J-2021-0606. Decision date: 15/04/2021

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

Computer Science and Engineering

## Specific prerequisites

- Knowledge and skills in programming, at least 6 higher education credits, equivalent to completed course  
DD1331/DD1310/DD1311/DD1312/DD1314/DD1315/DD1316/DD1318/DD1321/DD100N/ID1018.
- Knowledge in algorithms and data structures, at least 6 higher education credits, equivalent to completed course  
DD1320/DD1321/DD1325/DD1327/DD1338/DD2325/ID1020/ID1021.

- Knowledge in mathematics equivalent to at least 22.5 higher education credits.

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

## Intended learning outcomes

After passing the course, the student shall be able to

- describe dependability attributes formally
- specify dynamic behaviour of autonomous systems and their properties
- use risk assessment and safety analysis techniques to define dependability requirements
- model and verify autonomous systems by means of automatic tools

in order to

- be able to work with autonomous safety critical systems in research and/or development
- be able to identify risks in connection with autonomous systems and use modelling, verification and security techniques to prevent them.

## Course contents

Techniques to achieve dependability, safety analysis, derivation of dependability requirements from safety analysis, modelling and verification of safety requirements, safety assurance case, multi-agent systems, emergent behaviour, goal-oriented modelling and verification of safe and reliable multi-agent autonomous systems, evolutionary algorithms and learning algorithms for mission planning and navigation, safety of mission planning.

## Examination

- LAB2 - Laboratory work, 6.5 credits, grading scale: A, B, C, D, E, FX, F
- QUI1 - Digital quiz, 1.0 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.

- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.